using the parity check matrix to generate parity bits corresponding only to preset columns in the parity check matrix; and

decoding a signal obtained by removing, from the LDM signal, a signal corresponding to the LDPC information word bits generated by decoding the signal transmitted through the first layer, the parity bits generated by the encoding, and the parity bits generated by the decoding except the parity bits generated by the encoding, thereby to generate information word bits transmitted through a second layer.

10. The decoding method as claimed in claim **9**, wherein the preset columns are columns having a degree of 1 in the parity check matrix.

11. The decoding method as claimed in claim **10**, wherein the parity check matrix comprises a first parity check matrix comprising a first information word partial matrix and a first parity partial matrix, which is a dual diagonal matrix, and a second parity check matrix comprising a second information word partial matrix and a second parity partial matrix, which is a unit matrix, and

wherein the preset columns have the degree of 1 in the parity check matrix.

12. The decoding method as claimed in claim **9**, wherein the decoding the signal transmitted through the first layer from the LDM signal comprises:

generating the LDPC information word bits and the parity bits, corresponding to the signal transmitted through the first layer, using a first LDPC decoder; and

decoding the LDPC information word bits, corresponding to the signal transmitted through the first layer, using a first Bose, Chaudhuri, Hocquenghem (BCH) decoder to generate information word bits transmitted through the first layer.

13. The decoding method as claimed in claim **12**, wherein the generating the parity bits corresponding only to the preset columns comprises encoding the LDPC information word bits, corresponding to the signal transmitted through the first layer, using an LDPC encoder to generate the parity bits corresponding only to the preset columns in the parity check matrix.

14. The decoding method as claimed in claim **13**, wherein the generating the parity bits corresponding only to the preset columns comprises:

BCH encoding the information word bits transmitted through the first layer to generate BCH parity bits; and

encoding the information word bits transmitted through the first layer and the BCH parity bits to generate the parity bits corresponding only to the preset columns in the parity check matrix.

15. The decoding method as claimed in claim **12**, wherein the decoding the signal obtained by the removing comprises:

generating LDPC information word bits and parity bits, corresponding to a signal transmitted through the second layer, using the first LDPC decoder; and

decoding the LDPC information word bits, corresponding to the signal transmitted through the second layer, using the first BCH decoder to generate the information word bits transmitted through the second layer.

16. The decoding method as claimed in claim **12**, wherein the decoding the signal obtained by the removing comprises:

generating LDPC information word bits and parity bits, corresponding to a signal transmitted through the second layer, using a second LDPC decoder; and

decoding the LDPC information word bits, corresponding to the signal transmitted through the second layer, using a second BCH decoder to generate the information word bits transmitted through the second layer.

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